What happens in a Knowledge Exchange and Enterprise Network (KEEN) project?

Executive summary of knowledge exchange processes in KEEN projects, funded by the European Regional Development Fund and managed by the University of Wolverhampton

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KEEN Knowledge Exchange & Enterprise Network

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INTRODUCTION

This executive summary gives an overview of the investigations into the knowledge transfer process of the KEEN programme. The evaluation focuses on the process of knowledge transfer, which is considered critical to the achievement of the intervention objectives. The research identified the new knowledge being transferred and provides an understanding of the methods, interactions, and operational procedures. These underpin the selection, translation, and transformation of new knowledge into tangible and measurable benefits for organisations and relevant stakeholders. The key aims were to understand the process of knowledge transfer and its component elements across the portfolio of 126 projects, and to consider how knowledge transfer may have impacted on the success, or otherwise, of the intervention, in consideration of the key project variables.

The detailed research information supporting the evaluation can be found in eight separate reports comprised of:

1. The Executive Summary (This document)
2. The full summary of the evaluation
3. The characteristics of the projects
4. A review of the relevant literature
5. The research methodology
6. The typology of the interventions
7. A report on survey responses
8. Case Studies and an analysis report.

Project profiles

The KEEN programme generated 126 projects managed by the University of Wolverhampton in conjunction with five other partner universities: Aston University, Birmingham City University, Coventry University, Staffordshire University, and the University of Worcester. The distribution of the projects between the universities is shown in Figure 1.

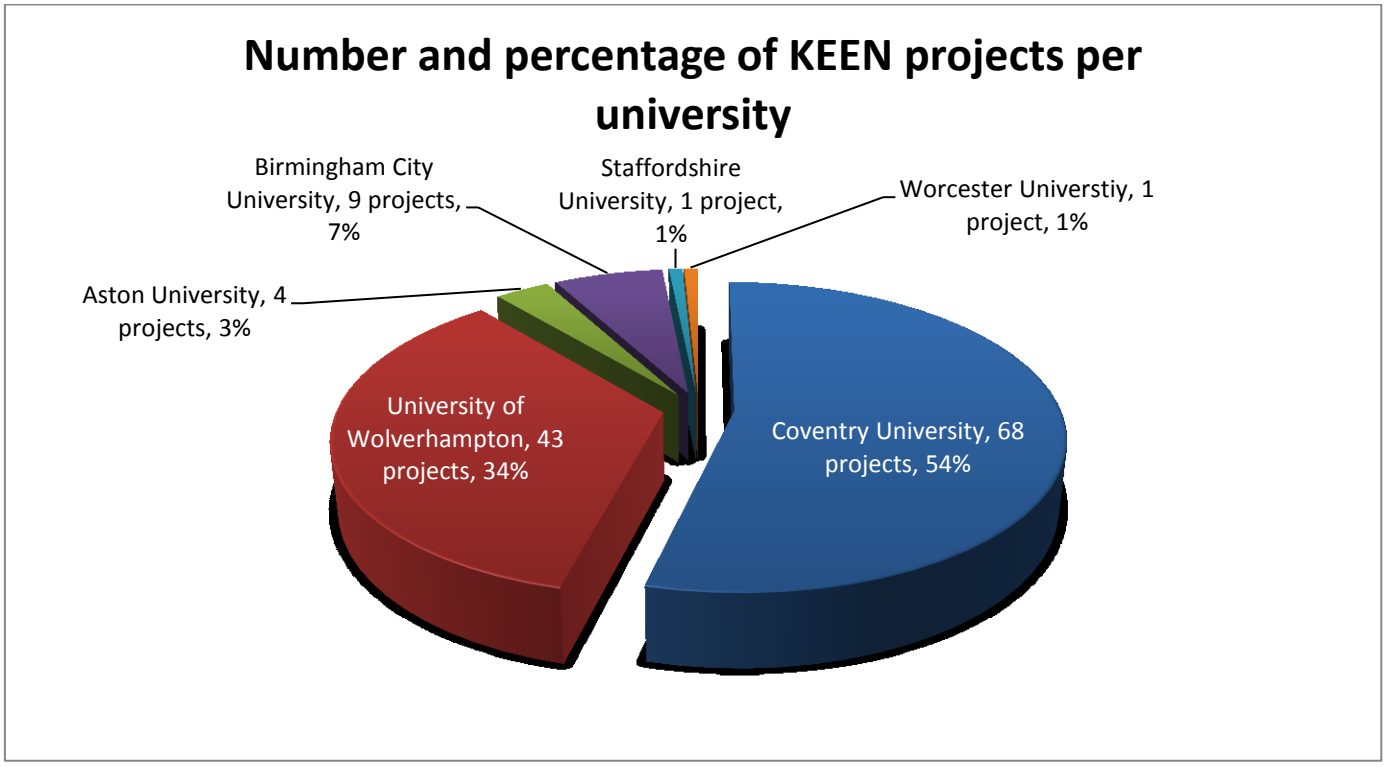

Figure 1: Number and percentage of KEEN projects per university

The project companies were partially supported by the European Regional Development Fund (ERDF) during the life of the programme, from September 2012 to November 2015. This enabled the companies to recruit talented graduates and access cutting edge university knowledge throughout the duration of the project. The project topics covered aspects such as furniture design, web development, environmental sciences, and engineering – there is no such thing as a typical KEEN project. Each one was bespoke, built around particular business requirements tailored directly towards the SMEs that proliferate within the West Midlands region.

Business Intervention

The primary business interventions are illustrated in Figure 2:

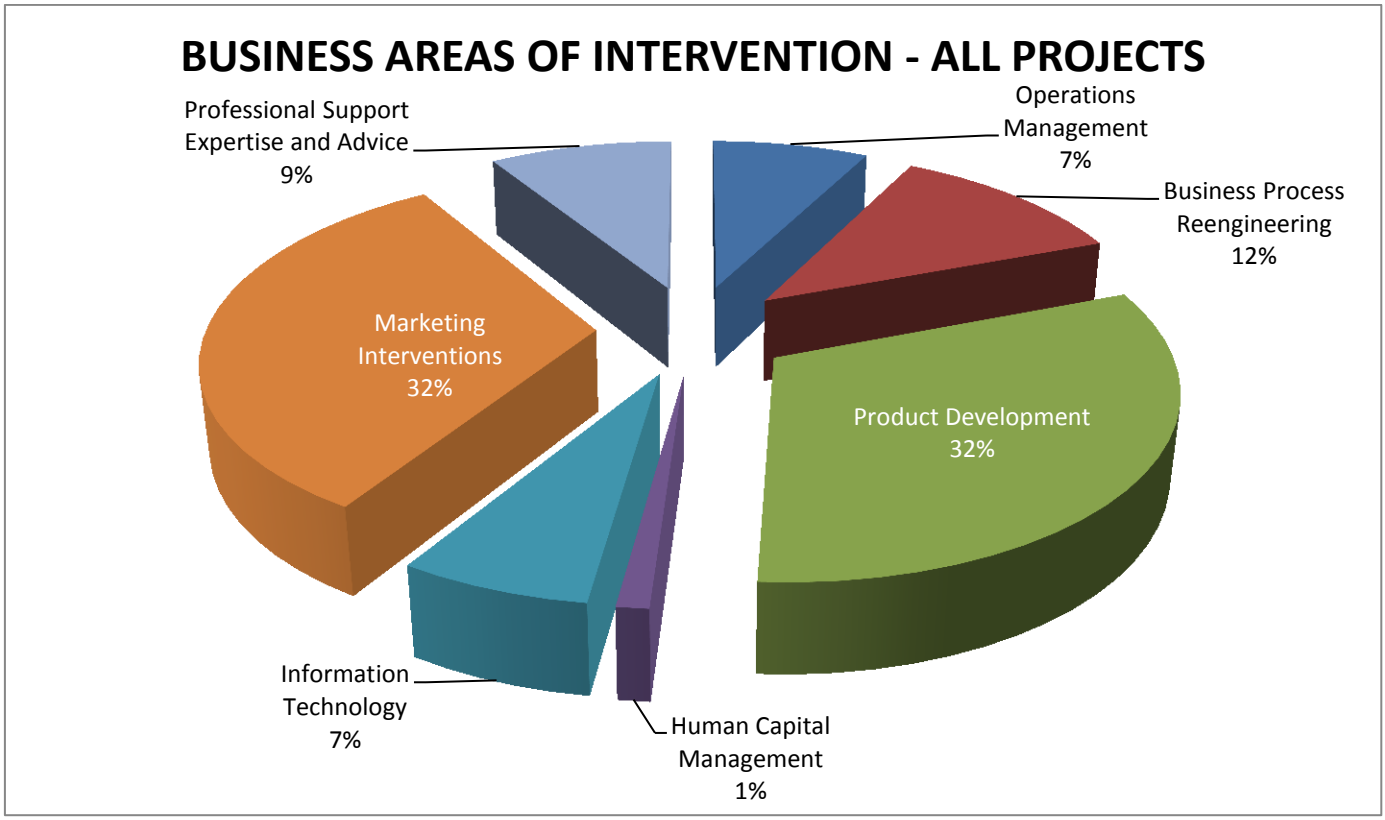

Figure 2: The proportion of projects for each of the primary business interventions

Further analysis of the business intervention showed that each project had several interventions beyond the initial focus, with 617 interventions being provided to SMEs through 126 KEEN projects. The number of intervention per university is shown in Table 1. An understanding of the potential nature and type of business intervention in the West Midlands may help future projects to target specific businesses. It may also help universities to consider more closely the likely range of interventions in future projects and the possible range of expertise required to support them. This intervention analysis illustrates that business intervention is more complex than it appears.

Business Area of Intervention	Cov	Wolv	Aston	BCU	Staff	Worcs	Total	%
Operations Management	27	11	5	4	0	0	47	8%
Business Process Reengineering	44	18	4	4	1	1	72	12%
Product Development	112	73	0	9	0	2	196	32%
Human Capital Management	4	3	0	0	0	0	7	1%
Information Technology	28	10	0	3	0	0	41	7%
Marketing Interventions	63	106	5	21	3	1	199	32%
Professional Support Expertise and Advice	44	10	0	1	0	0	55	9%
	322	231	14	42	4	4	617	100%

Table 1: Business area of intervention

Online survey

In view of the complexity of the projects and the number and variety of participants, an online survey was conducted to seek their views. There were responses from 213 participants (a 71% return), which is an excellent response rate illustrating the value the respondents placed on the KEEN programme.

Summary of survey responses

The general consensus of the survey responses was that KEEN projects brought new knowledge into the companies, thus helping to close a knowledge gap. The company respondents had two reasons for selecting a KEEN project: the identification of a knowledge gap in their organisation, and the idea of employing a graduate to provide this new knowledge. The projects added to companies' existing base of knowledge and the capacity of the company to develop into new areas of work. The projects also led to the acquisition of new skills by both affiliates and academics, although the main impacts were on companies and affiliates.

A number of fundamental benefits, including the generation of new ideas, putting these ideas into practice, and creating a future plan for these ideas, were highlighted by the survey respondents. An illustration of the new ideas from the affiliate survey can be seen in Figure 3.

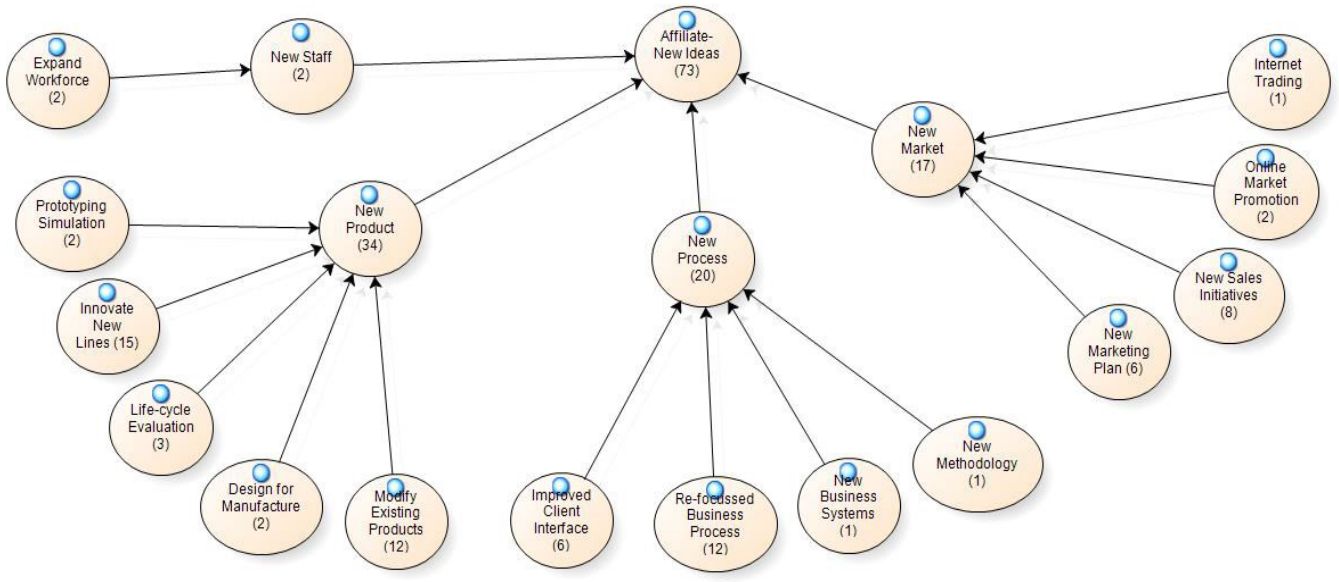

Figure 3: New ideas highlighted from the affiliate survey

Further results from the survey indicated a number of positive unforeseen outcomes that have led to innovations in business practices and new products which have been developed as a result of KEEN projects. Indeed, the general view across the respondents was that the KEEN programme helped to enhance the skills of the affiliates and the productive capacity of the companies, which might not otherwise have a) employed a graduate, or b) innovated new products, markets, and processes.

As a result of taking part in a KEEN project, there were also positive recommendations from all participants:

- 93% of companies would recommend university/business collaboration to other firms
- 91% of academics would recommend university/business collaboration to other academics
- 97% of affiliates (graduates) would recommend this type of project to other graduates.

In answer to the final survey question regarding any other comments, the following positive comments were noted from company respondents:

"*This has been an excellent project and allows SMEs to work with universities, whilst having an affiliate based within the company."*

"The KEEN programme offers an excellent opportunity to nurture academic talent and build collaborative ventures with the university, which hopefully will help shape some of its future focus."

Findings

Affiliates brought new knowledge into the companies for which most stakeholders had planned. Some of the companies were ready for this knowledge, but others were not as fully prepared in practice for the demands of changes upon their colleagues. Both attention to communication and change management are key underpinning platforms of a successful transfer of knowledge, and may include external as well as internal parties.

Academics in a mentoring role helped to support affiliates particularly in the early stages of the project, and were able to use change management knowledge and skills that were largely lacking in the affiliates. Data from the surveys showed the importance of affiliates gaining high level communication and persuasion skills, personal resilience, and a willingness to take the initiative and to make decisions within a time frame. Companies also recognised that the affiliates required support during their early days in the job, and offered help in the form of induction programmes, training, or associating them with a close colleague or project team to learn from, and be available for, questions and guidance. In some instances, they also provided training for their employees to prepare them for their new colleague and the new knowledge they were expected to bring to the company.

Key Benefits:

- The companies benefitted from the new knowledge in meeting the objectives they had set in their project plans, and in many cases results exceeded their expectations.
- Many projects had the potential for sustainable results due to businesses designing plans and strategies for the future use of the new knowledge brought into the company.
- 62% of companies indicated that they either wanted to, or had, employed the affiliate following the completion of the project.

For project companies, the survey and case study material highlighted some of these key benefits:

"Established and operated a marketing plan – previously none in existence. [The company] *won a national tender that has influenced change in our client journey process.* [The project] *reviewed and transformed both front and back stage operations. Client segmentation and fee restructure."*

"Reorganisation of management structure to cut down on overlaps and streamline operations."

- Academics benefitted from the project by gaining new skills in mentoring and facilitating as well new technical skills and new insight into small businesses.
- In some cases, academics also saw research opportunities.
- Many academics found their experience useful for lecture material, and also for sharing with colleagues the benefits of collaborating with small businesses.

These quotations highlight some of the benefits which academics felt had accrued to them:

"New skills and knowledge based on the application rather than the technology being used. The technology is used in other fields but not in environmental and so this has provided new insight which could be used for future research approaches."

"New skills in collaborating with industry. New knowledge in dealing with air pollution. New awareness of technological solutions to industrial problems."

"Excellent opportunity to engage with industry leaders and exchange knowledge, especially to aid my teaching."

- Affiliates benefitted in gaining new skills, an understanding of the way an SME works, and the resilience required to work in a business setting.
- Many were also pleased that they were allowed and encouraged to take responsibility for using and sharing the new knowledge they brought to the company and, in doing so, meeting the expectations of their employer.
- 63% of affiliate respondents either wanted, or had agreed, to stay with the company after completion of the project.

The affiliates also commented on some of the personal benefits of KEEN:

"How to plan projects and manage outcomes, presentation skills, social media skills, planning skills."

"Analytical skills, critical thinking, new technologies, use of energy software."

Recommendations

These recommendations offer guidance not only to a potential future KEEN programme but for any university/industry collaboration in which the focus is knowledge transfer.

Recommendation 1: All companies should establish a clear need by conducting a knowledge audit to create a project definition.

Recommendation 2: Future projects should consider offering a common knowledge audit toolbox for all potential project applicants to help them to determine knowledge gaps in their company and better inform their project plan.

Recommendation 3: Universities should develop publicity materials that showcase specific knowledge transfer possibilities for SMEs based on their research and development portfolios.

Recommendation 4: Documentation of the project plan should be uniform, developed jointly between the business and the university, and regularly updated.

Recommendation 5: Recruitment support needs to be integrated into the administrative function of the programme, and steps taken to make the best use of the available pool of university graduates.

Recommendation 6: Training programmes should be set up to offer participants knowledge transfer concepts and models which may be adapted to suit company needs. Key participants should be offered training in knowledge brokering, mentoring, and facilitating knowledge and skills transfer.

Recommendation 7: Change management techniques should be introduced as part of the initial training for affiliates and academics. Ensure project management responsibility is identified in the project plan: The affiliate may be seen as the day-to-day project manager, but a company representative acts as the project manager for strategic decisions.

Recommendation 8: Paperwork must be simplified where appropriate, and payment processes devised that are readily understood and have less impact on the cash flow of the business.

Recommendation 9: All KEEN projects should have regular, keep-in-touch meetings between the academic, company, and affiliate, scheduled in the project plan, to ensure goals are being met.

Recommendation 10: Training and encouragement is required for the affiliate to understand the use of non-verbal means of sharing knowledge.

Recommendation 11: The universities should showcase the project experiences by producing a short video to capture the change and innovation in the project companies.

Recommendation 12: The universities should instigate knowledge sharing events to raise the profile and highlight learning from business collaborations such as the KEEN projects.

Recommendation 13: Follow up and exit/ follow-on strategies should be devised for each project to promote sustainability.

Recommendation 14: Universities should support the lead academics to enable the utilisation of the information and expertise gained from each project.

Recommendation 15: University/business collaborations need to be introduced which embody an undergraduate employment scheme. In the scheme, the undergraduate will, as part of their tutored course, be offered one year of in-company work, incorporating academic practical study (building on the recommendations of the Wilson study (2012) for the Department of Business, Innovation and Skills). This scheme should build on the university collaborations of the KEEN programme to develop a West Midlands approach to innovation/entrepreneurship (cf. Collaborative Advantage identified in the report on the Wilson study (2012).

Reference

Wilson, T. (2012) *A Review of Business-University Collaboration*. London: Department for Business Innovation and Skills. [Online] [Accessed 15 June 2015]. Available at: <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32383/12-610-wilson-review-business-university-collaboration.pdf>.

Glossary of terms appearing in this research report series

Absorptive Capacity: An organisation's ability to recognise the value of new information, assimilate it, and apply it to commercial ends.

Affiliate: The job title given to a graduate who is working full-time on a bespoke KEEN project within a business.

Business Development Manager (BDM): The job title given to the manager who develops university/business collaboration activities for the university driving promotional activities and the acquisition of new interactions.

(The) Black Country: An area of the West Midlands within England which is north west of Birmingham. It includes the metropolitan boroughs of Dudley, Sandwell, Walsall, and Wolverhampton.

Business Innovation: The process by which an organisation introduces new ideas, workflows, methodologies, and services.

Business Process Improvement: A systematic approach which helps an organisation optimise its underlying operating processes to achieve more efficient results.

Computer Aided Design (CAD): The use of computer software to create, modify, analyse, and visualise designs by encoding the topography in mathematical models stored on IT hardware.

Computer Aided Manufacturing (CAM): The use of computer software to interpret CAD models to generate control instructions for machine tools and related machinery in the manufacture pieces of work.

Chief Executive Officer (CEO): The job title given to the highest ranking executive in a company. Their main responsibilities include developing and implementing high-level strategies and making major corporate decisions.

Customer Relationship Management: A system which is now typically IT-based (and often interlinked with enterprise management systems) which manages a company's interactions with current and future customers.

European Regional Development Fund (ERDF): The controlling body for allocating and distributing finance sourced through the European Union.

Explicit Knowledge: Knowledge that can be readily articulated, codified, accessed, and verbalised as well as easily transmitted to others. Most forms of explicit knowledge can be stored in electronic and document media.

Gabriel Szulanski: An American researcher who is the author of "The process of knowledge transfer" (2000)" and several other academic papers on this topic.

HEI (Higher Education Institution): A title for a university or institution conducted by a higher education corporation, or an institution designated as eligible to receive support from funds administered by the Higher Education Funding Council for England (HEFCE).

Implementation: An early stage in the knowledge transfer process proposed by Gabriel Szulanski. It begins with the decision to proceed with the knowledge transfer, and knowledge flows between the source (university) and the recipient (company) prior to its use.

Information Communication Technology (ICT): An umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, and satellite systems, as well as the various services and applications associated with them, such as videoconferencing and distance learning.

Initiation: The first stage in the knowledge transfer process proposed by Gabriel Szulanski, containing all of the events that lead to the decision to transfer. At this time, there is an awareness of a need for knowledge and an agreement on the knowledge required.

Innovation: The process whereby an idea, either new or old, is translated into goods or services that create value which customers will pay to obtain.

Integration: A closing stage in the knowledge transfer process proposed by Gabriel Szulanski, beginning after the recipient achieves satisfactory results with the transferred knowledge. The use of the transferred knowledge gradually becomes part of the business routines at the company, enhancing its capacity for further development.

Intellectual Property (IP): A term defining any creation of the mind, such as: inventions, literary and artistic works, designs, symbols, names, and images used in commerce. These may be considered the assets of an enterprise.

Intervention: A process applied to an area of a business which requires new knowledge to address a perceived knowledge gap (and addressed by support through a KEEN project within these reports).

Knowledge Audit: An effort to understand where an organization stands in terms of knowledge management and its knowledge assets.

Knowledge Brokers (KBs): An intermediary (an organisation or a person) which aims to develop relationships and networks with, among, and between producers and users of knowledge by providing links, knowledge sources, and, in some cases, knowledge itself (e.g. technical know-how, market insights or research evidence) to organisations within its network.

Knowledge Exchange (KE) Practice: A process which brings together academic staff, users of research and wider groups and communities to exchange ideas, evidence, and expertise.

Knowledge Exchange and Enterprise Network (KEEN): A programme of three-way partnerships between a university, business, and graduate. It is a collaboration project, which provides assistance to enterprises at the pre-innovation stage, and is part-funded by the European Regional Development Fund (ERDF).

Knowledge Transfer (KT): A process whereby expertise flows from a source, such as a university, into a recipient, such as a company (SME).

Knowledge Transfer Network (KTN): An institution to foster better collaboration between sciences and creativity.

Knowledge Transfer Partnerships (KTP): A UK-wide programme designed to support businesses to improve their competitiveness, productivity, and performance through the better use of innovation, knowledge, and skills.

Liaison Officer: An individual from the university working on the KEEN programme who provides administrative support to ensure that the projects run successfully.

Local Enterprise Partnership (LEP): Voluntary partnerships between local authorities and businesses set up in 2011 for the development of business innovation and skills to help determine local economic priorities and lead economic growth and job creation within the local area.

Managing Director (MD): A job title given to the chief executive or most senior employee in a company.

Market Research: An organised effort to gather information about target markets or customers. It is a very important component of business strategy.

Micro Companies: A term applied to businesses which employ fewer than ten members of staff.

New Product Development (NPD): The development process of bringing new products to market.

Office for National Statistics (ONS): The executive office of the UK Statistics Authority, a non-ministerial department which reports statistical data directly to the UK parliament.

Original Equipment Manufacturer (OEM): A term used where one company makes parts or sub-components that are assembled into another company's end products. This means the finished product may not display the branding of the company that made its component parts.

Qualitative Research: A method which investigates and analyses text and images rather than numerical data.

Quantitative Research: A method in which numerical data are collected to investigate a topic.

Ramp Up: The follow-on stage in the knowledge transfer process proposed by Gabriel Szulanski, beginning when the recipient starts using the transferred knowledge. During this stage, the company will be mostly concerned with identifying and resolving any unexpected problems.
Research and Development (R&D): Investigative activities which businesses undertake with the intention of making a discovery that can either lead to the development of new products or procedures, or to improvements in existing products or procedures. Ultimately, such work should realise commercial products.
Small Business Research Initiative (SBRI): An established process to connect public sector challenges with innovative ideas from industry, supporting companies to generate economic growth and enabling improvement in achieving government objectives.
Small and Medium Enterprises (SMEs): A business that employs fewer than 250 members of staff.
Standard Industrial Classification (**SIC**): A system used by Companies House to classify businesses by a code which indicates the nature of the business; it is a requirement for all UK companies.
Stickiness: A term proposed by Szulanski to describe the difficulties or barriers encountered by companies whilst undertaking the knowledge transfer process**.**
Sustainability: The ability to maintain activities or processes in the long term (when a project has been completed).
Tacit Knowledge: A term used to describe knowledge usually retained (often unconsciously) in the human memory, and is the inverse of explicit knowledge, i.e. formal or codified knowledge. It is the kind of knowledge that is difficult to transfer to another person by means of writing it down or verbalising it.
Technology Transfer: The process of transferring skills, knowledge, technologies, methods of manufacturing, samples of manufacturing, and facilities between governments or universities and other institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials or services.
Tender: A term which usually refers to the process whereby governments and financial institutions invite bids for large projects that must be submitted within a finite deadline.
The Society of Motor Manufacturers and Traders (SMMT): The Trade Association for the United Kingdom motor industry. Its role is to "promote the interests of the UK automotive industry at home and abroad."
University/Business Collaboration: All types of direct and indirect, personal and non-personal, interactions between universities (HEIs) and business for reciprocal and mutual benefit.
West Midlands: One of the nine official regions of England. This region contains Herefordshire, Shropshire, Staffordshire, Warwickshire, the West Midlands Metropolitan County, and Worcestershire.
West Midlands Metropolitan County: A metropolitan county in Central England. It is made up of seven local government districts: the City of Wolverhampton, Dudley, Walsall, Sandwell, the City of Birmingham, Solihull, and the City of Coventry.
Wolv/UoW/Wlvs: Abbreviations used for the University of Wolverhampton.
Worcs: Abbreviation used for the University of Worcester.

Karl Royle - KEEN Evaluation Project Leader

Karl Royle is the Head of Enterprise and Commercial Development in the Faculty of Education, Health and Wellbeing, University of Wolverhampton, where he works as a Research Project Director. Karl has considerable experience of project management (Certified Scrum Master) and materials development for both screen and print-based media, as well as having a background in teacher education, professional development, and education management. His current interests are around the development of thinking skills in game-based learning, and the digital skills and habits of learners using ubiquitous technology, alongside its transfer to educational contexts.

Dr Gillian Lyons is a Senior Lecturer in the University of Wolverhampton Business School. Her background includes business management and consultancy and her experience covers engineering, hospital management, banking and education. She has a special interest in SMEs, specifically in the marketing, enterprise and knowledge transfer areas. Gillian holds a Masters degree in Marketing Management, a professional diploma in Marketing, and a professional Doctorate in Business Administration. Her research examined the process and outcomes of knowledge transfer in SMEs, with a particular focus on strategic marketing. She has been the lead academic for a number of Knowledge Transfer Partnerships and KEEN interventions, and has provided consultancy assistance through a variety of government funded programmes. Gillian's experience in both industry and the service sector has included senior management roles in finance and general business management. She is an experienced business counsellor and consultant specialising in advising SMEs. Her research interests include university/business collaboration, together with its implication for curriculum development and CPD.

Dr David Boucher is a Research Associate at the University of Wolverhampton. For most of his career, David has worked within the West Midlands automotive component supply industry in the field of research and development, although recently he spent a brief spell employed in supply chain data analysis for an aerospace company. His original academic discipline was chemistry, and David obtained a PhD from the University of Birmingham for research into the catalytic polymerisation of olefins. From polymer synthesis, David moved on into material science in the field of engineering within the Lucas Group. He worked in a variety of roles for the group with responsibilities for research, manufacturing systems, quality, and design. Meanwhile the business became part of Automotive Lighting, a global supplier of vehicle lighting products. Now established in engineering, in 2005 David obtained an MSc with distinction in Advanced Technology Management in Engineering from the University of Wolverhampton. He has brought data management and a long experience in research to this project.

Paula Simeon is a Research Associate at the University of Wolverhampton. Paula's professional background and experience includes business management innovation and growth, operations management, marketing management, project management, financial management, audits and performance reviews, coaching and consultancy. She has considerable experience of working in private and public sector firms, as accountant, auditor, and business development executive for SMEs. Paula's interests are in the areas of business innovation, university/business collaborations, mergers and acquisitions, and foreign direct investments. She has an MBA (Master of Business Administration) with a research focus on mergers and acquisitions, as well as an MSc in Finance and Accounting, with a research focus on the efficient market hypothesis; both obtained from the University of Wolverhampton. She is a Fellow of the Chartered Management Institute.

Dr Andrew Jones is a Research Associate at the University of Wolverhampton. Andrew obtained his PhD from the University of Wolverhampton in 2014. The thesis investigated the motivations and consequences behind foreign direct investment entering the English Premier League. He has also worked as a Visiting Lecturer at the university and has taught in areas such as the dynamics of multinational companies and managerial economics. His research interests include football finance, football club regulation, sports ownership models, and trends in foreign direct investment flows. He also holds an MA in International Business.

Shazad Saleem is a Research Associate at the University of Wolverhampton. Shazad is a young, passionate interdisciplinary researcher, who has a background in sports and exercise science. He obtained an MRes in Sports Research in 2013 from the University of Wolverhampton. Shazad has worked as a teaching assistant at the university, where he also conducted research and designed an intervention in active learning in higher education. His main research interests are data analysis in sports and business performance, imagery in sports and exercise performance, emotional regulation in performance, university/business collaboration, and innovation.

Dr Michael Stokes is currently working as a consultant largely with clients in the post-16 sector and was formerly Senior Lecturer at the University of Wolverhampton, where his work focused on mentoring, coaching and leadership, and management in education. He was responsible for the development, management and delivery of national programmes in facilitating change and mentoring and coaching for the government Skills for Life programme. His interest in these areas is built on his long experience as a senior manager in FE. He has a PhD in Continuing Education, an MSc in Transportation and Traffic Planning, and an MSc in Environmental Resources.


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